REMARKS/ARGUMENTS

Claims 1 and 13 are currently amended for more clear definition that the description "boundaries between the first phase shift transparent regions and the second phase shift transparent regions each having one end at an edge of each of the transparent main features" is added. The amendment to the claims is made according to the description "each of the transparent main features being surrounded by the first phase shift transparent regions and the second phase shift transparent regions interlaced contiguously along a periphery of the transparent main feature" described in claims 1 and 13, and the drawings shown in Figs. 4 and 6. No new matter has been added. Therefore, the applicants politely request acceptance of the above mentioned claim amendments.

Response to Claim Rejections

1. Claims 1-2, 4, 7-20 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,388,736 (Smith et al.) for reasons of record.

Response:

With respect to claims 1 and 13 of the present application, in the lithography method for forming patterns, a phase shift mask (PSM) is used. The PSM comprises a plurality of transparent main features, a plurality of first phase shift transparent regions, and a plurality of second phase shift transparent regions. Each of the transparent main features is surrounded by a plurality of first phase shift transparent regions and a plurality of second phase shift transparent regions. The first phase shift transparent regions and the second phase shift transparent regions are arranged in alternation with each other. In the present application, each of the transparent main features is surrounded by first phase shift transparent regions and

second phase shift transparent regions interlaced, that is, each edge of the transparent main feature abuts the first phase shift transparent region(s) and the second phase shift transparent region(s), in a way that boundaries between the first phase shift transparent regions and the second phase shift transparent regions each comprising one end locating at the edge of the transparent main feature. Furthermore, the patterns of the photoresist layer formed are corresponding to the patterns of the transparent main features. For example, when the transparent main feature is in a shape of a line, the resulting patterns of the photoresist layer is also in a shape of a line (in a same direction as the direction of the linear transparent main feature). When the transparent main feature is in a shape of a square, the resulting patterns of the photoresist layer will be in a shape of a square or a circle. The first phase shift transparent regions and the second phase shift transparent regions arranged in alternation at a periphery of the transparent main feature serve for a destructive interference to eliminate the light leakage phenomenon occurring in the periphery of the pattern corresponding to the transparent main feature, which frequently occurs in the prior art. The light outgoing the periphery of the pattern is unwanted and is eliminated in the present application. Such that, the contrast is improved and a pattern corresponding to the transparent main feature can be well formed. There are not line patterns produced corresponding to the boundaries of the first phase shift transparent regions and the second phase shift transparent regions. Such line patterns are not desired.

However, Smith discloses a method for generating an image on a photosensitive surface of a substrate from a relief pattern on a translucent photomask. The image comprises a line having a width corresponding to a space between opposing closely spaced phase shift boundary regions in or on the photomask. As disclosed by Smith, the formation of the line corresponds to two phase shift boundary regions of different phase shift regions on the mask. The two boundary

regions are close such that the intensity of the transmitted light can be reduced to form a dark line on the photoresist layer. Smith further disclosed a mask having two sets of phase shift boundary regions which intersect each other orthogonally. The collaborated light source needs a special intensity distribution and is so-called "cross-quad quadrupole illumination" (referring to Col. 4, lines 21-30 of Smith). The pattern such formed comprises two lines intersecting orthogonally, as shown in Fig. 5A as Smith disclosed. Taking the orthogonal intersection of the two sets of boundary regions on the mask as the shape of the symbol "#", the centric part of the nine parts is in a shape of a square or a rectangle. Each edge of the centric part abuts only one phase shift region. The boundary regions of two phase shift regions each connect with one vertex of the centric part. Therefore, Smith did not disclose the invention of the present application. The function attained in the present application is different from the teaching by Smith. Smith taught that a pattern formed corresponding to the phase shift boundary regions is in a shape of a line, or two lines orthogonally intersecting as the shape of the symbol "+"(referring to Col. 3, lines 65-67 of Smith), in a direction same as the direction of the boundary regions. Therefore, Smith did not disclose claims 1 and 13 of the present application. Claims 1 and 13 are novel over Smith. Reconsideration of claims 1 and 13 is hereby respectfully requested.

As claims 2, 4, 7-20 are dependent upon claims 1 and 13, respectively, they should be allowed if claims 1 and 13 are allowed. Therefore, reconsideration of claims 2, 4, 7-20 is politely requested.

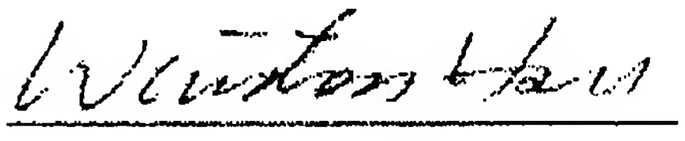
2. Claims 3, 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,388,736 (Smith et al.) in view of U.S. Patent Application Publication No. 2004/0013948 (Lin et al.) for reasons of record.

Response:

Claims 3, and 5-6 of the present application are based on claim 1 and further restricted to the photoresist layer as a positive photoresist layer or a negative photoresist layer or the pattern comprising a metal line pattern or an island pattern. Since claim 1 is not disclosed, taught, or suggested by Smith as the reason described above, claims 3, and 5-6 will not be obvious from Smith in view of Lin. Therefore, reconsideration of claims 3, and 5-6 is hereby respectfully requested.

Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Sincerely yours,



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